

TWO NEW EYELESS OSTRACODS OF THE GENUS ENTOCYTHERE FROM FLORIDA

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The two new species described herein occur in the subterranean waters of the Florida peninsula on three albinistic crayfishes. In neither of these closely related ostracods is there a well defined eye, and it is doubtful that a trace of one is present. Both are close relatives of *Entocythere equicurva* Hoff (1944).

Only two studies of the ostracods of this genus in Florida have been published, and the most recent is that of Hart (1959). In this work he presented a key to the species known from Florida and the lower Chattahoochee-Flint basin, described two new species, and cited additional hosts and locality records for some of those that had been previously described by Hoff.

KEY TO THE OSTRACODS OF THE GENUS ENTOCYTHERE OF FLORIDA ¹

- | | | |
|-------|---|---|
| 1 | Clasping apparatus extends ventrally beyond ventral margin of distal portion of base of copulatory complex | 2 |
| 1' | Distal portion of base extends much farther ventrally than does clasping apparatus | 8 |
| 2(1) | External border (fig. 1, EB) of clasping apparatus entire (figs. 2, 7-9, 14, 15, 17, 19, 20) | 3 |
| 2' | External border of clasping apparatus with a talon or a distinct emargination (figs. 16, 18) | 7 |
| 3(2) | Internal border (fig. 1, IB) of clasping apparatus with a single tooth (occasionally an additional minute tooth present near junction of vertical and horizontal rami); if two prominent teeth present then vertical and horizontal rami are lying at approximately a right angle (figs. 7-9) | 4 |
| 3' | Internal border of clasping apparatus with two or more prominent teeth; if only two, then clasping apparatus C-shaped (figs. 14, 15, 17) | 5 |
| 4(3) | Distal extremity of clasping apparatus with two teeth; distal portion of base without a prominent ridge (figs. 7-9) <i>E. lucifuga</i> , sp. nov. | |
| 4' | Distal extremity of clasping apparatus with three teeth; distal portion of base with a distinct ridge near anterodistal extremity (figs. 1, 2) <i>E. ambophora</i> , sp. nov. | |
| 5(3') | Internal border of C-shaped clasping apparatus with two teeth (fig. 17) <i>E. equicurva</i> Hoff (1944) | |

¹ Modified from Hart (1959).

- 5' Internal border of clasping apparatus with more than two teeth (figs. 14, 15) 6
- 6(5') Clasping apparatus swollen at junction of two rami (fig. 14)
.....*E. elliptica* Hoff (1944)
- 6' Clasping apparatus not swollen at junction of two rami (fig. 15)
.....*E. dorsorotunda* Hoff (1944)
- 7(2') External border of clasping apparatus with two prominences (fig. 16)
.....*E. talulus* Hoff (1944)
- 7' External border of clasping apparatus with a distinct finger-like talon (fig. 18)*E. hobbsi* Hoff (1944)
- 8(1') Extremity of distal portion of base bifurcate*E. torreyi* Hart (1959)
- 8' Extremity of distal portion of base blunt with an anterodorsally directed angular prominence*E. geophila* Hart (1959)

ENTOCYTHERE AMBOPHORA², sp. nov.

Male.—Shell (fig. 5) subovate with posterior portion slightly higher than anterior; margins entire, lacking emarginations and spines, with a few widely dispersed submarginal setae on valves. The shell size (in mm.) of 10 specimens follows.

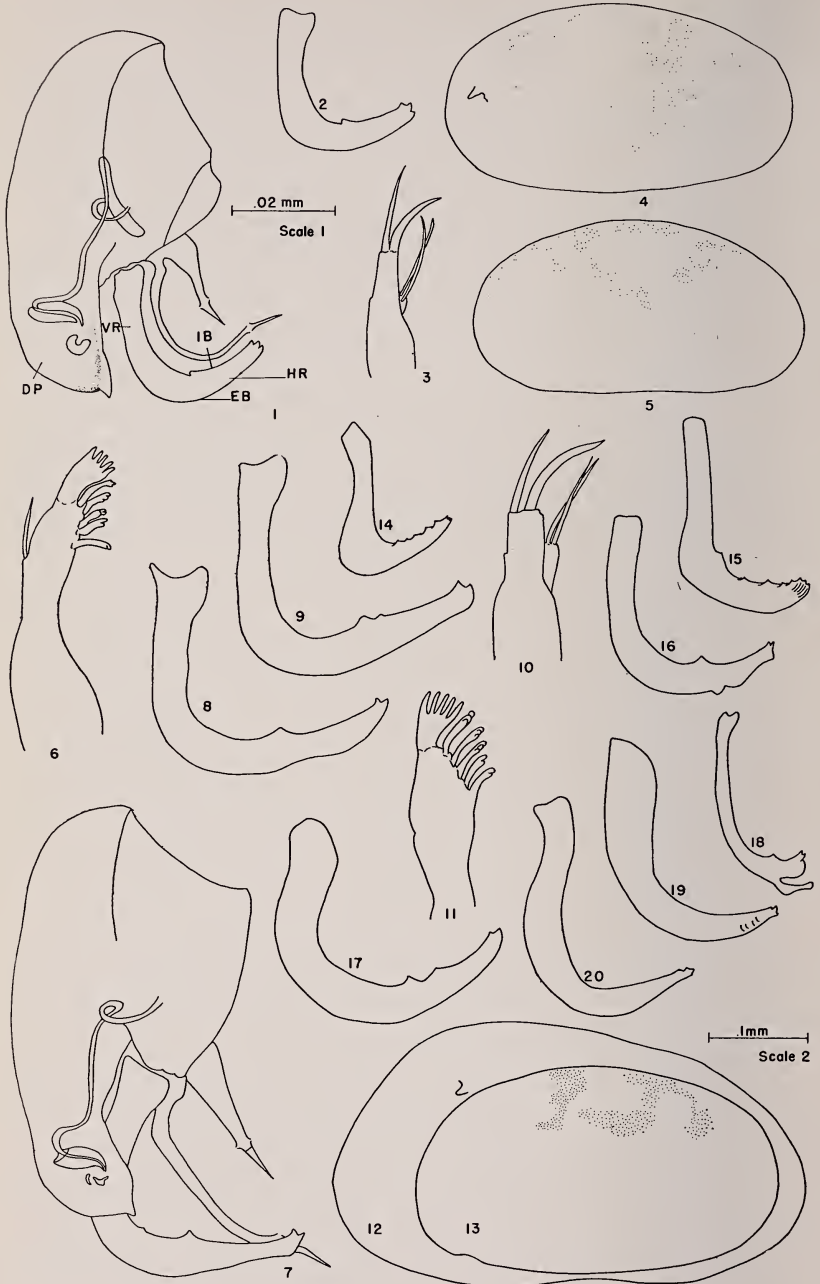
Length	Height	Length/Height
0.305	0.170	1.79
0.305	0.175	1.74
0.305	0.170	1.79
0.310	0.170	1.82
0.305	0.160	1.91
0.310	0.165	1.88
0.305	0.160	1.91
0.305	0.160	1.91
0.310	0.160	1.94
0.310	0.160	1.94

Mandible (fig. 6) entirely similar to that of *E. daphnioides* Hobbs (1955: 328) except distal seta on penultimate podomere extends distally almost to tip of terminal setae, and large terminal scoop-like seta on ultimate podomere not so heavy.

Maxilla (fig. 3) also similar to that of *E. daphnioides* except palp lacking seta on convex dorsal surface; although, emargination present opposite level of distal end of protopodite.

Copulatory complex (figs. 1, 2), except for lacking a finger guard, consisting of the usual elements. Distal portion of base with a

² *Ambon* G.—raised border or rim; *phorus* G.—to bear. Name chosen because of ridge on distal portion of base of copulatory complex.



distinct ridge along cephalodistal margin that terminates in an acute spine. Distal and proximal portions of base not clearly distinguishable. Horizontal and vertical rami of clasping apparatus merge imperceptibly; distal extremity of latter ramus with three teeth, external border entire, and internal border with a single tooth.

Female.—Shell of *triunguis* female (fig. 4) similar to that of male but larger. Third claw on antenna apparently frequently vestigial or absent. A small papilla near posterior extremity of body but no ruffled skirt or J-shaped rod. Shell size (in mm.) of 10 specimens follows.

Length	Height	Length/Height
0.350	0.180	1.94
0.350	0.185	1.89
0.350	0.210	1.67
0.355	0.190	1.87
0.340	0.185	1.84

EXPLANATION OF PLATE ³

Abbreviations

DP—distal portion of base
 EB—external border
 HR—horizontal ramus
 IB—internal border
 VR—vertical ramus

- Fig. 1. Copulatory complex of *E. ambophora*.
 Fig. 2. Clasping apparatus of *E. ambophora*.
 Fig. 3. Maxilla of *E. ambophora*.
 Fig. 4. Right valve of shell of female *E. ambophora*.
 Fig. 5. Right valve of shell of male *E. ambophora*.
 Fig. 6. Mandible of *E. ambophora*.
 Fig. 7. Copulatory complex of *E. lucifuga*.
 Figs. 8 and 9. Clasping apparatus of *E. lucifuga*.
 Fig. 10. Maxilla of *E. lucifuga*.
 Fig. 11. Mandible of *E. lucifuga*.
 Fig. 12. Right valve of shell of female *E. lucifuga*.
 Fig. 13. Right valve of shell of male *E. lucifuga*.
 Figs. 14-20. Clasping apparatus (after Hart, 1959).
 Fig. 14. *E. elliptica*.
 Fig. 15. *E. dorsorotunda*.
 Fig. 16. *E. talulus*.
 Fig. 17. *E. equicurva*.
 Fig. 18. *E. hobbsi*.
 Fig. 19. *E. torreyi*.
 Fig. 20. *E. geophila*.

³ Figs. 4, 5, 12 and 13 drawn to scale 2; Figs. 1-3 and 6-11 drawn to scale 1.

Length	Height	Length/Height
0.360	0.190	1.89
0.350	0.195	1.79
0.345	0.190	1.82
0.330	0.180	1.83
0.340	0.185	1.84

Smaller biunguis female readily distinguished from triunguis female by undivided penultimate podomere of antenna.

Type Locality.—Palm Springs, Seminole County, Florida. The host is *Procambarus acherontis* (Lönnerberg). No other ostracods or crayfishes were taken from this spring (see Hobbs, 1940: 388). This ostracod is known only from the type locality.

Disposition of Types.—The holotype, allotypic triunguis female, morphotypic biunguis female, and a dissected male paratype are deposited in the United States National Museum. Paratypes are in the collections of Mr. E. A. Crawford and the junior author.

Relationships.—*Entocythere ambophora* has its closest affinities with members of the Columbia group (see revised definition in Hart, 1959: 203), and is most closely allied to the species described below. This affinity is most clearly seen in the form of the distal portion of the base of the copulatory complex. It may be distinguished from all other members of the genus by the following combination of characters: clasping apparatus C-shaped with a single tooth on internal border and with three terminal teeth; distal portion of base with a prominent ridge along anterodistal border that distally is produced into a spine; eyes absent.

ENTOCY THERE LUCIFUGA³, sp. nov.

? *Entocythere equicurva* Hoff, 1944: 340 (in part)

Hoff (*loc. cit.*) reported the presence of *E. equicurva* on several crayfishes in Florida, Georgia, and Alabama and listed *Procambarus lucifugus alachua* (Hobbs) as one of the hosts. It seems probable that this host record should be for *Entocythere lucifuga*. Although this ostracod is closely allied to *E. equicurva* it may be distinguished from the latter by the absence of eyes, the apparent larger size, and

³ Lucifugus L.—shunning the light. Name chosen because of the subterranean habitat of this ostracod.

the usually fewer teeth along the internal border of the clasping apparatus.

With the following exceptions the description given for *E. ambophora* applies to *E. lucifuga*.

Male.—Shell (fig. 13) subovate with a slight emargination, sometimes absent, near posteroventral extremity. The shell size (in mm.) of nine specimens follows.

Length	Height	Length/Height
0.390	0.210	1.86
0.365	0.195	1.87
0.350	0.200	1.75
0.360	0.195	1.85
0.360	0.195	1.85
0.360	0.195	1.85
0.390	0.200	1.95
0.370	0.200	1.85
0.360	0.200	1.80

Copulatory complex (figs. 7-9) similar to that of *E. ambophora* but distal portion of base without a ridge on anterodistal margin and clasping apparatus with two terminal teeth; internal border with one or more teeth.

Female.—Shell of triunguis female (fig. 12) conspicuously higher posteriorly than that of male, and ventral margin with a distinct concavity slightly anterior to midlength.

The shell size (in mm.) of the only triunguis females available follows.

Length	Height	Length/Height
0.420	0.250	1.68
0.425	0.250	1.70
0.415	0.220	1.89
0.410	0.235	1.74

Shell of biunguis female similar to that of triunguis form, but lacking concavity on ventral margin; anterior portion proportionately higher.

Type Locality and Range.—Hog Sink, about 13 miles west of Gainesville, Alachua County, Florida (see Hobbs, 1942: 138). The host is *Procambarus lucifugus alachua* (Hobbs). Specimens of *E. lucifuga* were found on *P. pallidus* from Squirrel Chimney, 12.5 miles northwest of Gainesville.

Disposition of Types.—The holotype, allotypic triunguis female, morphotypic biunguis female and a dissected male paratype are deposited in the United States National Museum. Paratypes are in the collection of Mr. E. A. Crawford and the junior author.

Relationships.—*E. lucifuga* is more closely related to *E. ambophora* than to any described species, although it has much in common with *E. equicurva*. It may be distinguished from all other species by the following combination of characters: clasping apparatus with one or two teeth on internal border and two terminal teeth; eyes lacking.

LITERATURE CITED

HART, C. W., JR.

1959. The ostracods of the genus *Entocythere* from the Lower Chattahoochee-Flint Basin: with a review of the occurrence of the genus in Florida, and descriptions of two new species. *Bull. Fla. St. Mus., Biol. Sci.*, 4(6): 193-204, 19 figs.

HOBBS, HORTON H., JR.

1940. Seven new crayfishes of the genus *Cambarus* from Florida, with notes on other species. *Proc. U. S. Nat. Mus.*, 89(3097): 387-423, 22 figs.
1942. The crayfishes of Florida. *Univ. Fla. Pub., Biol. Sci. Series*, 3(2): 1-179, 3 text figs., 11 maps, 2 pls.
1955. Ostracods of the genus *Entocythere* from the New River system in North Carolina, Virginia, and West Virginia. *Trans. Amer. Micros. Soc.*, 74(4): 325-333, 10 figs.

HOFF, C. CLAYTON

1944. New American species of the ostracod genus *Entocythere*. *Amer. Midl. Nat.*, 32(2): 327-357, 33 figs.